

PATENT SPECIFICATION



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671387

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COMPLETE SPECIFICATION

Improvements relating to Slidable Doors

We, VAUXHALL MOTORS LIMITED, a British Company, of Kimpton Road, Luton, Bedfordshire, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to slidable doors and particularly to the mounting thereof by rollers.

According to the invention, the door carried on a guide rail by means of rollers is additionally guided by secondary rollers which are spring pressed into contact with a parallel guide rail.

From another aspect, the invention involves a pair of spaced rollers for carrying the door on a guide rail and a second pair of rollers held in contact with a parallel guide rail by a floating spring. The spring is common to the second pair of rollers and is preferably attached between pivoted brackets carrying them.

The scope of the invention is defined by the appended claims, and how it can be performed is hereinafter particularly described with reference to the accompanying drawings in which:—

Figure 1 is a perspective view of part of a motor vehicle having a slidable door according to this invention, the door being shown in disassembled relation;

Figure 2 is a side elevation, with parts in section, of the door and guide rails; the door being shown in full lines for the closed position, and in chain dotted lines for the open position;

Figure 3 is a plan in section, taken on line III—III of Figure 2;

Figure 4 is a perspective view of a roller unit and guide rail in disassembled relation;

Figures 5 and 6 are respectively a section and a side elevation of a roller unit and guide rail;

Figures 7 and 8 are respectively a dis-

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assembled perspective view and section of an alternative form of guide for the bottom edge of the door.

In applying the invention to a vehicle door as shown in the drawings, the door opening of the vehicle body 1 has an upper guide rail 2 of outwardly-open channel section, and a lower guide rail 3 of downwardly-open channel section. Between these guide rails the door 4 is mounted for sliding from a front, closed position shown in full lines in Fig. 2 to a rear, open position shown in chain dotted lines. The mounting and sliding is effected as follows. The upper inside surface of the door 4 carries a pair of brackets 5 and 6 (Figs. 1 and 4) into which fit roller spindles 7 respectively adjacent the front and rear edges of the door. Each spindle carries a roller 8 which runs on the lower surface of the guide rail 2. (See Figs. 5 and 6). Pivotaly mounted on each roller spindle 7 is a bracket 9 which carries a second roller 11 and to which can be attached a spring 12 such that spring pressure will raise the second roller 11 sufficiently above the first roller 8 to make contact with the underside of the upper flange of the guide rail 2. The bracket 9 in effect forms a bell crank lever, pivoted at one end on the roller spindle 7 and carrying the second roller 11 at the other end, the bend of the lever being attachable to the spring 12. The spring is preferably a tension spring as shown; and, being attached directly to the two brackets 9, is floating and under tension to force the pair of secondary rollers 11 upwardly into contact with the upper flange of the guide rail 2.

The guide rail 2 has slots 13 so that the door can be assembled and mounted by lateral movement as will be clear from the disassembled position shown in Fig. 1. The slots are spaced unequally with the rollers 8 so that the door cannot by itself jump sideways off the guide rail track.

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Adjacent the end of the run of each secondary roller, as it operates as a "leading" roller, is a slot or ramp or cam 14 (Fig. 2) in the upper flange of the guide rail 2 to act as a check to hold the door in the end position, open or closed as the case may be. More positive checks in the form of blocks and catches may be fitted.

The lower end of the door is guided so as to be incapable to lateral rattle. One arrangement consists in a double roller arrangement as above described and as shown in Figs. 1, 2 and 3, but with the roller axes vertical, the corresponding parts having the same but primed reference numerals. The operation is in effect a "spreading" of pairs of rollers 8¹, 11¹ between the flanges of the lower guide rail 3 by means of a common floating spring 12¹.

Another alternative arrangement shown in Figures 7 and 8 consists of a strip of woven fabric 16 laced through slots in a channel member 17 fixed to the bottom part of the door 4 and fitting, so as to be slidable, between the flanges of the downwardly-open lower guide rail 3.

The number, disposition and size of the rollers can be varied, for example the carrying rollers can be at the bottom edge of the door: and the form and disposition of the spring can be altered from that above described, according to practical requirements. For example a separate spring can be used for each roller unit, so as to be attached to a fixed abutment bracket. In this way three or more roller units can be used, without a floating spring. The door can, furthermore, be fitted with sealing strips at its edges. Such and similar modifications are to be deemed within the scope of the invention as defined by the appended claims.

What we claim is:—

1. A slidable door having a main or door carrying roller engageable with a first guide rail surface and a secondary roller engageable under spring action with a second and parallel guide rail surface, the arrangement being such that the action of the spring serves to urge both rollers into contact with their respective guide rail surfaces throughout the travel of the door.

2. A slidable door according to claim 1 having a pair of spaced main or door carrying rollers and a pair of spaced secondary rollers, each operatively associated with a respective main roller.

3. A slidable door comprising a pair of spaced rollers for carrying the door on a guide rail and a second pair of rollers mounted on pivoted brackets adapted to

be held in contact with a parallel guide rail surface by a tension spring attached to said brackets.

4. A slidable door according to any of claims 1 to 3 wherein the said main and secondary rollers are located adjacent one edge of the door whilst at the opposite edge of the door is located a similar set of rollers whose axes are at right angles to those of the first set, and which are locatable in a guide rail which prevents lateral rattle.

5. A slidable door according to any of claims 1 to 3 wherein the said main and secondary rollers are located adjacent one edge of the door whilst at the opposite edge of the door is located a flange or the like carrying or co-operating with fabric material in a channel guide member, to prevent lateral rattle.

6. A slidable door for a motor vehicle comprising two main rollers journaled thereon adjacent one horizontal edge and adapted to carry the weight thereof when mounted on a guide surface, a bracket or lever pivoted on the spindle of each of said main rollers and carrying at its other end a second or guide roller, and a tension spring interconnecting the brackets at a point on each located between the respective pair of rollers and offset from the plane containing their axes so as to constrain the second rollers to make contact with a parallel guide surface, and slidable guide means adjacent the other horizontal edge of the door adapted to prevent lateral rattle.

7. A slidable door according to claim 6 in which said slidable guide means is formed of pairs of rollers constructed and mounted similar to the main and guide rollers.

8. A slidable door assembly having a door according to any of claims 1 to 7, and upper and lower guide rail surfaces one of which has slots spaced differently from the spacing of the weight carrying rollers so as to permit lateral mounting.

9. A slidable door assembly according to claim 8 having a door according to any of claims 1 to 7 and having a ramp or cam adjacent a roller in the end positions of the door, to act as a door-hold check.

10. A motor vehicle door assembly substantially as hereinbefore particularly described and as shown in Figures 1 to 6 of the accompanying drawings.

11. A motor vehicle door assembly substantially as hereinbefore particularly described and as shown in Figures 1 to 6 but modified as shown in Figures 7 and 8 of the accompanying drawings.

E. WILLIAMSON,
Chartered Patent Agent.

PROVISIONAL SPECIFICATION

Improvements relating to Slidable Doors

We, VAUXHALL MOTORS LIMITED, a British Company, of Kimpton Road, Luton, Bedfordshire, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to slidable doors and particularly to the mounting thereof by rollers.

According to the invention, the door carried on a guide rail by means of rollers is additionally guided by secondary rollers which are spring pressed into contact with a parallel guide rail.

From another aspect, the invention involves a pair of spaced rollers for carrying the door on a guide rail and a second pair of rollers held in contact with a parallel guide rail by a floating spring. The spring is common to the second pair of rollers and is preferably attached between pivoted brackets carrying them.

The invention is of particular utility for vehicle doors which require to be slidable; and in so applying it, the upper edge of the door carries a pair of roller spindles respectively above and adjacent the front and rear edges of the door. Each spindle carries a roller which runs on a guide rail, preferably formed by bending one edge of a metal plate into a V-groove, its other edge being bent over the groove to form the second guide rail. Pivotally mounted on each roller spindle is a bracket which carries a second roller and to which can be attached a spring such that spring pressure will raise the second roller sufficiently above the first roller as to contact with the second, upper guide rail. The bracket in effect forms a bell crank lever, pivoted at one end on the roller spindle and carrying the second roller at the other end, the bend of the lever being attachable to the spring. The spring is preferably a tension spring;

and, being attached directly to the two brackets, is floating and under tension to force the pair of secondary rollers upwardly into contact with the upper guide rail.

The lower guide rail has slots so that the door can be assembled and mounted by lateral movement. The slots are spaced unequally with the weight carrying rollers so that the door cannot by itself jump sideways off the track.

Adjacent the end of the run of each secondary roller, as it operates as a "leading" roller, is a slot or ramp or cam in the upper guide rail to act as a check to hold the door in the end position, open or closed as the case may be. More positive checks in the form of blocks and catches may be fitted.

The lower end of the door is guided so as to be incapable to lateral rattle. One arrangement consists in a double roller arrangement as above described, but with the roller axes vertical. The operation is in effect a "spreading" of pairs of rollers between a pair of parallel guide rails by means of a common floating spring.

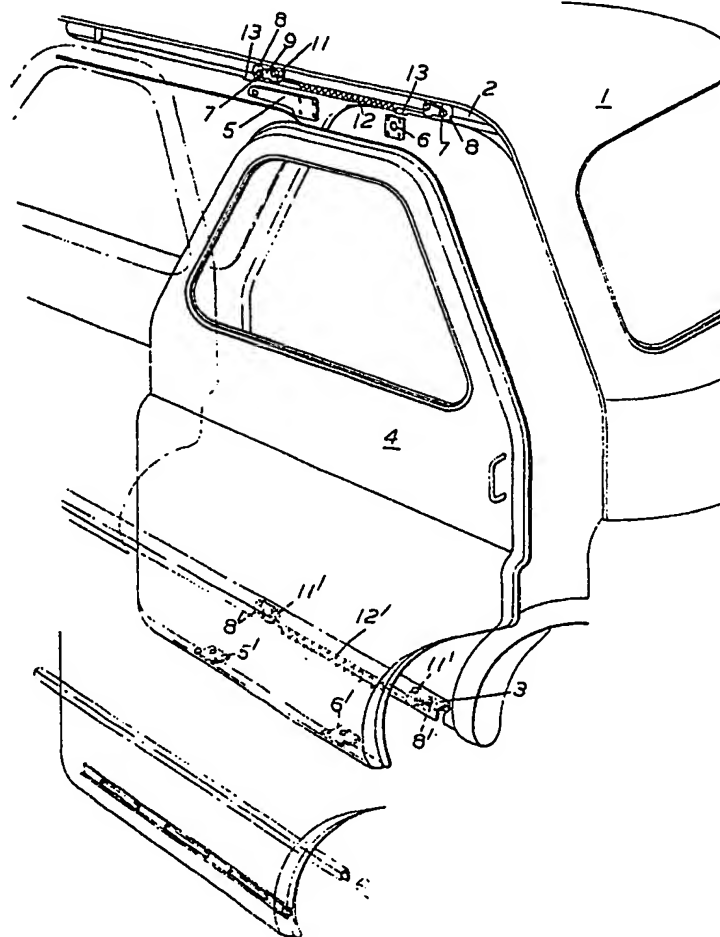
Another arrangement consists of a strip of woven fabric laced through slots in a bottom part of the door and fitting, so as to be slidable, between parallel guide rails.

The number, disposition and size of the rollers can be varied, and the form and disposition of the spring can be altered from that above described, according to practical requirements. The door can, furthermore, be fitted with sealing strips at its edges. Such and similar modifications are to be deemed within the scope of the invention.

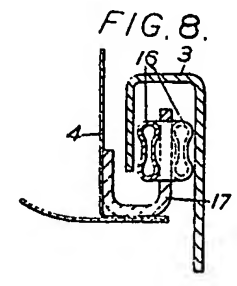
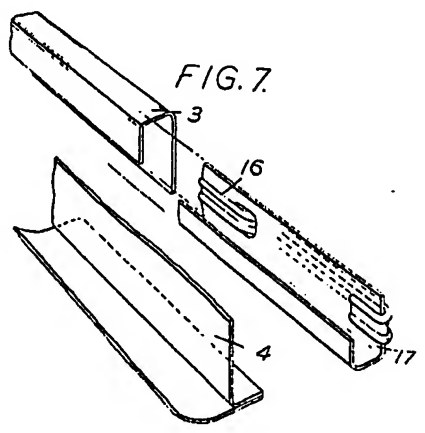
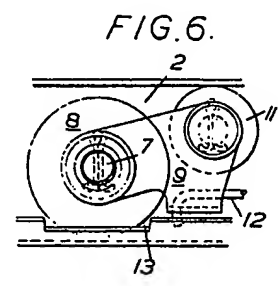
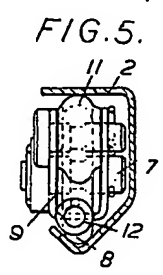
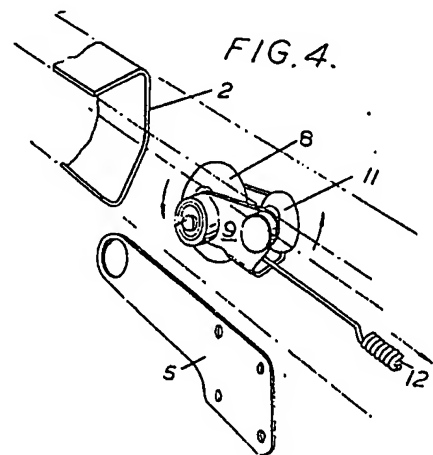
Dated this 21st day of April, 1949.

E. WILLIAMSON,
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FIG. 1.

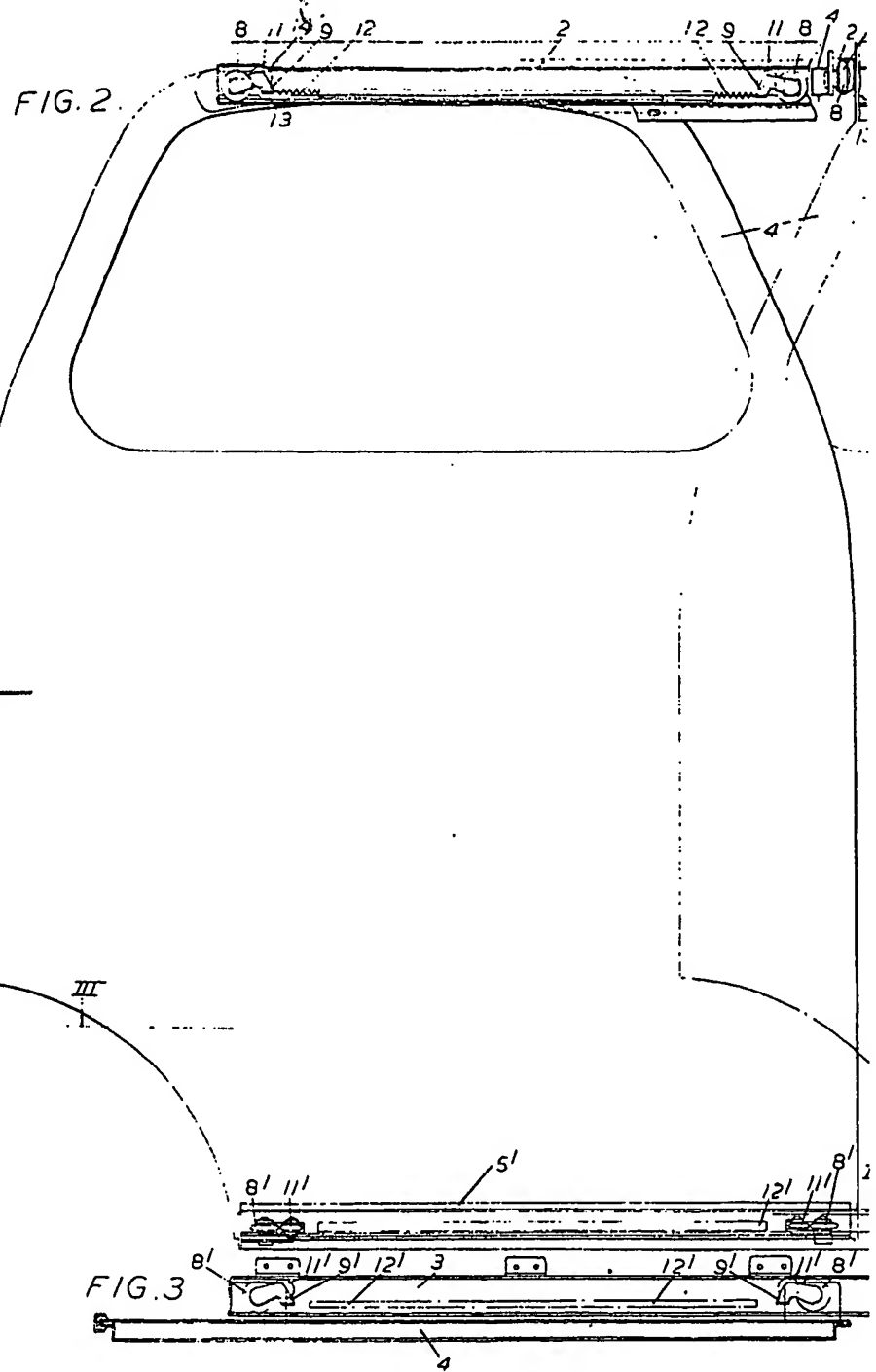


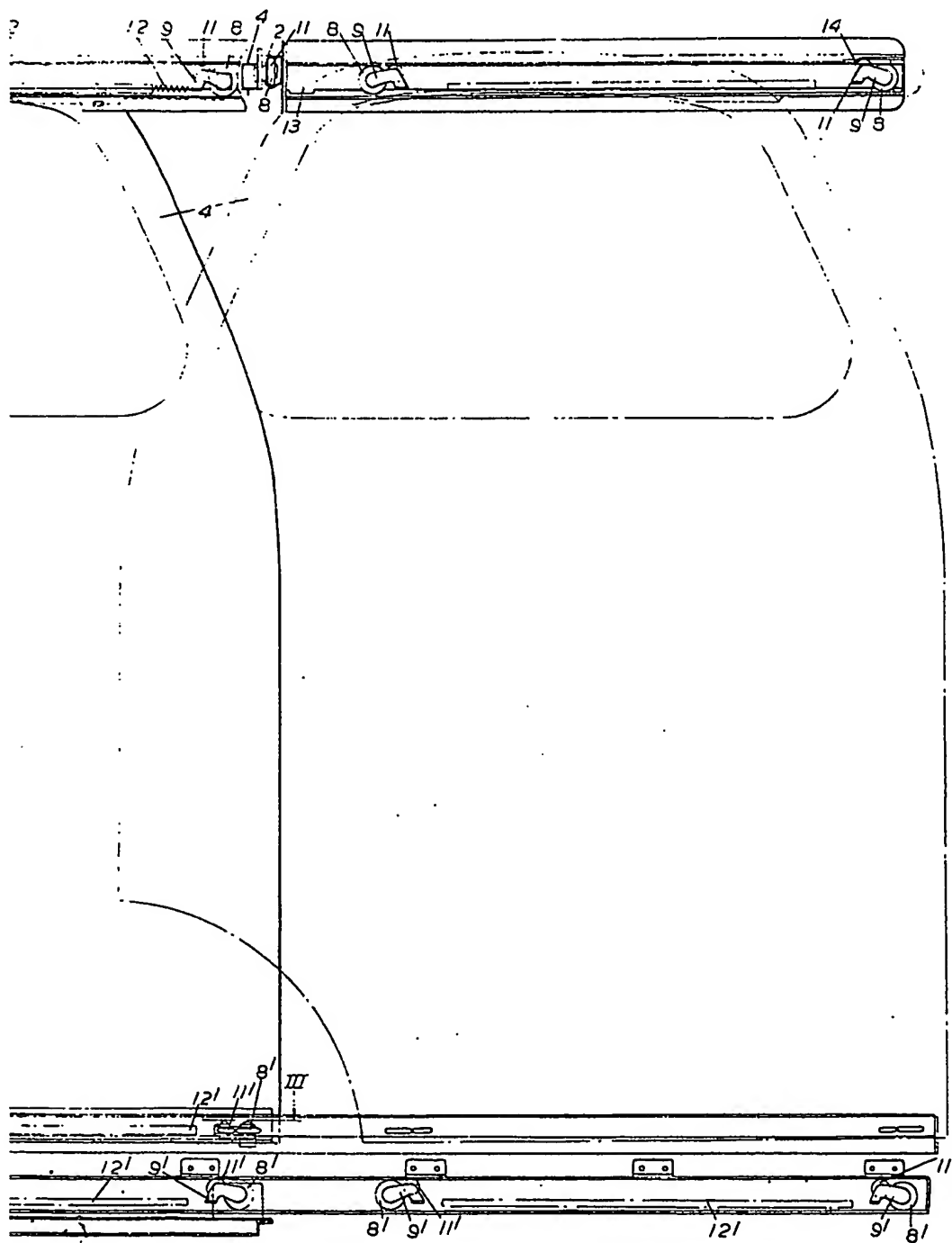
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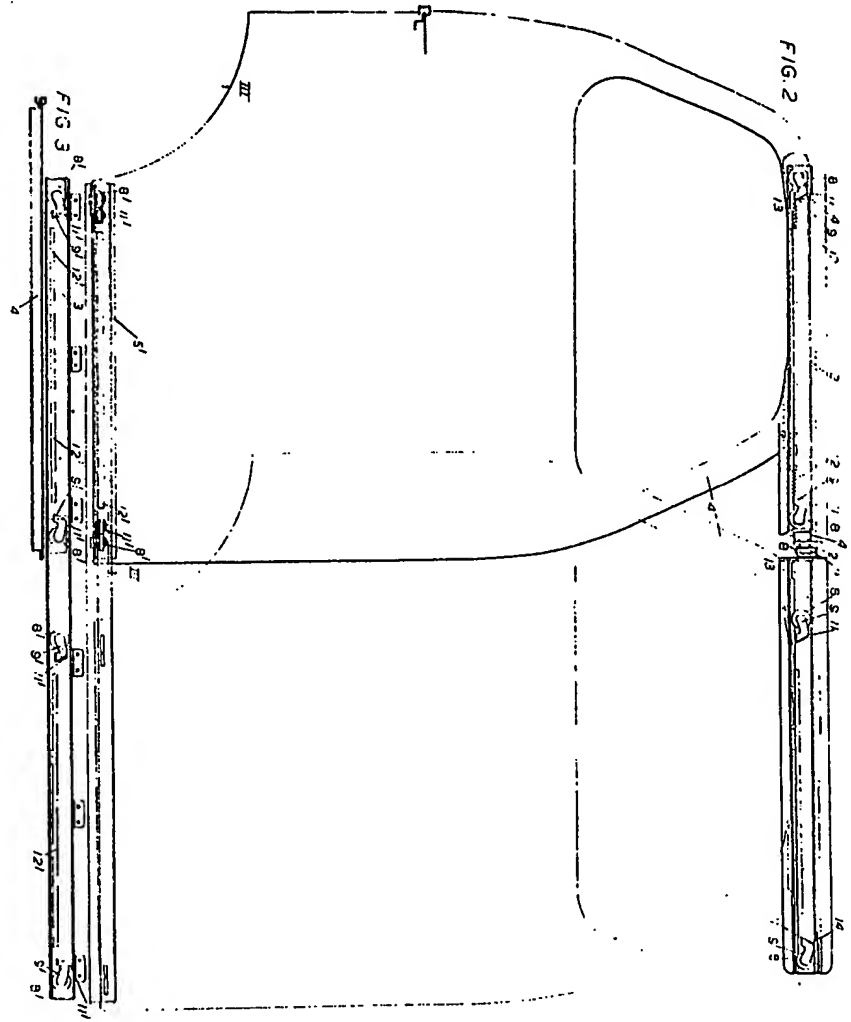




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671,387 COMPLETE SPECIFICATION

3 SHEETS
SHEET 2



Charles & Read Ltd.